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ABSTRACT

Teachers throughout the state of Nevada were surveyed concerning their formal preparation for teaching the metric system, concerns over teaching this system, and their knowledge of it. Results of the survey indicated that the majority of junior and senior high school teachers had studied the metric system, but the majority of elementary teachers had not. On the whole, elementary teachers felt less qualified to teach the metric system than did secondary teachers, although they were more aware of state guidelines which mandate the teaching of the metric system as the primary system of measurement. Eighty percent of elementary teachers felt these guidelines were unclear although only 40 percentof secondary teachers found them inadequate. Over 85 percent of teachers at all levels indicated they would attend metric workshops if they were available in their localities. Responses of teachers to seven items sampling knowledge of the metric system are presented. Senior high school teachers gave more correct responses than did junior high school teachers. Elementary teachers were less knowledgeable than the secondary teachers. (SD)

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NEVADA RCU STATEWIDE report

VOL. 10 NO. 5

THE IMMINENT MEETING WITH METRICS, II

A REPORT ON A SURVEY OF NEVADA IN-SERVICE TEACHERS

By Dr. John Trent and Ivan E. Lee

Editor's Note: *Last spring I pulled together some facts and figures and sampled the knowledge of some key educators concerning the progress and problems of the assimilation of the metric system as the mainstay of measuring systems in our mathematical fare. That article, which bears re-reading now, concluded with the admonition "Somebody better do something, starting with YOU!"*

At the same time, Dr. John Trent and Ivan Lee, of the University of Nevada's College of Education, were studying the actual conditions in the school through a questionnaire to in-service teachers. To the writers' knowledge, no other State has made such a survey. After reading the results of the survey, which Trent and Lee share with us below, I still say somebody better get on the ball. The meeting with metrics is "imminenter" than you think!

--Editor

Dr. John Trent

A set of questionnaires was sent to elementary, junior high, and high school teachers of the State of Nevada to determine the comparative needs of these teachers in relation to their knowledge of the metric system. Table I (page 2) breaks down the responses from the 525 questionnaires returned. Analysis of this data indicates that (a) while most elementary teachers of Nevada had not taken a college course in the metric system, a majority of both the junior high and senior high teachers had taken such a course; (b) in comparison to junior and secondary teachers of Nevada, most elementary teachers of Nevada felt less qualified to teach the metric system; (c) Nevada elementary teachers were more aware that the Nevada State Textbook Commission had recommended that all textbooks adopted after January 1, 1976, have the metric system as the primary system of measurement; (d) a majority of Nevada teachers on all levels (elementary, junior high, and high school) felt that students were inadequately prepared in the metric system; (e) approximately 80 percent of the elementary teachers felt there were not adequate guidelines, course outlines, and materials on the metric system available to them to adequately teach their students the metric system, whereas only 40 percent of the junior high and high school teachers believed that there were not sufficient guidelines, course outlines, and materials

--Continued on Page 2

SE020 731

A REPORT ON A SURVEY OF NEVADA IN-SERVICE TEACHERS (Continued from Page 1)

Ivan E. Lee

available to them; (f) over 85 percent of Nevada teachers would attend an in-service workshop on metrics if held in their county. There was no significant difference in the responses of elementary and secondary teachers.

From this questionnaire, the following inference may be drawn: while there is definitely a need for in-service metric workshops for elementary teachers of Nevada, the need is not nearly as great at the junior and senior high school levels.

* * *

Table I
Questionnaire Responses
Need for Metric Workshops

		Yes	No
1. Have you had a college course in which the metric system was taught or used?	Elem.	77 (21%)	292 (79%)
	Jr. High	33 (52%)	31 (49%)
	Sr. High	49 (66%)	25 (34%)
	Combined	159 (31%)	348 (69%)
2. Do you feel qualified to teach arithmetic (or science) courses in which the metric system is taught or used?	Elem.	85 (23%)	286 (67%)
	Jr. High	33 (59%)	23 (41%)
	Sr. High	54 (74%)	19 (26%)
	Combined	172 (34%)	328 (66%)
3. Did you know that in 1974 Congress passed a law stating that "education systems should be encouraged to provide metric education for students?"	Elem.	307 (84%)	59 (16%)
	Jr. High	50 (81%)	12 (19%)
	Sr. High	58 (81%)	17 (23%)
	Combined	415 (83%)	88 (17%)
4. Did you know that the Nevada State Textbook Commission has recommended that all textbooks adopted after January 1, 1976, have the metric system as the primary system of measurement?	Elem.	207 (82%)	166 (18%)
	Jr. High	23 (37%)	39 (63%)
	Sr. High	37 (49%)	38 (51%)
	Combined	267 (52%)	243 (48%)

		Very Well Prepared	Fairly Well Prepared	Inadequately Prepared	Not Prepared
5. How adequately prepared in the metric system are students when they commence the school year in your class?	Elem.	0%	16 (4%)	85 (23%)	263 (73%)
	Jr. High	0%	6 (10%)	34 (54%)	23 (36%)
	Sr. High	0%	6 (8%)	39 (53%)	29 (39%)
	Combined	0%	28 (5%)	158 (32%)	315 (63%)

		A Lot	A Little	None at All
6. How much are you now teaching the metric system to your students?	Elem.	12 (3%)	205 (57%)	146 (40%)
	Jr. High	10 (16%)	41 (66%)	11 (18%)
	Sr. High	25 (33%)	39 (52%)	11 (15%)
	Combined	47 (9%)	286 (57%)	168 (34%)

--Continued on Page 3

A REPORT ON A SURVEY OF NEVADA IN-SERVICE TEACHERS (Continued from Page 2)

7.(A) If a federally-funded in-service course in metric education was offered by the University of Nevada, Reno, would you attend it?

	Yes	No
Elem.	329 (91%)	34 (9%)
Jr. High	51 (85%)	8 (15%)
Sr. High	62 (87%)	8 (13%)
Combined	442 (90%)	50 (10%)

(B) If it were offered on the University of Nevada, Reno, campus?

	Yes	No
Elem.	118 (38%)	189 (62%)
Jr. High	26 (49%)	27 (51%)
Sr. High	29 (56%)	23 (44%)
Combined	173 (42%)	239 (58%

8. How great is the need for placing more emphasis on the metric system in elementary mathematics classes?

	Very Great	Needed Somewhat	No Need
Elem.	210 (59%)	134 (38%)	11 (3%)
Jr. High	36 (60%)	22 (3&%)	2 (3%)
Sr. High	45 (63%)	26 (36%)	1 (1%)
Combined	291 (60%)	182 (37%)	14 (3%)

9. Do you feel that adequate guidelines, course outlines, and materials on the metric system are available to you for satisfactorily teaching the metric system to your students?

	Yes	No
Elem.	67 (20%)	275 (80%)
Jr. High	16 (29%)	42 (72%)
Sr. High	26 (36%)	46 (64%)
Combined	109 (23%)	363 (77%)

CONCLUSIONS:

In general, one may conclude from the comparative studies that there is a great need for metric workshops for elementary teachers of Nevada and groups of elementary teachers who have similar characteristics. Thus, more emphasis on metric education should be incorporated into the elementary math methods programs. Even though the greatest need is for metric in-service workshops for elementary teachers of Nevada located in rural counties, there is a need for metric education for all elementary teachers.

The surveys showed that Nevada junior high and senior high math teachers have a better knowledge of the metric system. However, it is felt that because the questions asked were quite basic and not even 75 percent of the secondary teachers could answer most of these simple questions, they could profit from a metric workshop.

It is recommended that a relevant, comprehensive questionnaire be prepared and administered to secondary math and science teachers in order to verify this suspected need. A further implication of this survey may be that teachers feel unqualified to use metric materials that are already available to them. If they were able to attend metric workshops, they might better be able not only to utilize metric materials that are already available to them, but to wisely select from the wide variety of metric materials which will become available to them in the future.

--Continued on Page 4

BASQUING IN THE FUN . . . *by maurice*

The mechanical section of the Ag department--with all its gears and tools, nuts and bolts--thought they would have it rough meeting the upcoming metric system until they considered the plight of their brothers in horticulture who had all those inch-worms to convert!

SAMPLING BASIC KNOWLEDGE OF TEACHERS (Continued from Page 3)

To assess the basic knowledge of the teachers (on the honor system), we included seven questions which touch on some essential scales and concepts of the metric system. The aggregated responses are presented, as a matter of light-hearted interest, in Table II, below.

To satisfy those whose curiosity we have piqued enough to venture their own guesses, the answers to the seven questions are presented on the top of page 8.

* * *

Table II
Questionnaire Responses
Knowledge of the Metric System

1. The average lineman in the National Football League weighs:
   ____ a. 15 kilograms
   ____ b. 115 kilograms
   ____ c. 225 kilograms
   ____ d. 325 kilograms
   ____ e. 425 kilograms

	Correct Responses	Incorrect Responses
Elem.	168 (45%)	209 (55%)
Jr. High	46 (77%)	14 (23%)
Sr. High	61 (81%)	14 (19%)
Combined	275 (54%)	237 (46%)

2. The height of the average American male is:
   ____a. 1.85 centimeters
   ____b. .185 meters
   ____c. 1.85 meters
   ____d. 18.5 meters
   ____e. 18.5 centimeters

	Correct Responses	Incorrect Responses
Elem.	208 (55%)	169 (45%)
Jr. High	54 (90%)	6 (10%)
Sr. High	72 (97%)	2 (3%)
Combined	334 (65%)	177 (35%)

3. The average American car gasoline tank holds:
   ____a. 80 liters
   ____b. 180 liters
   ____c. 8 liters
   ____d. .8 liters
   ____e. 1,800 liters

	Correct Responses	Incorrect Responses
Elem.	206 (54%)	172 (46%)
Jr. High	47 (78%)	13 (22%)
Sr. High	69 (91%)	7 (9%)
Combined	322 (63%)	192 (37%)

4. Match the numbers below to the letters:

____a.	meter	1. .001 meter
____b.	centimeter	2. .01 meter
____c.	millimeter	3. 39.37 inches
____d.	kilometer	4. .1 meter
____e.	decimeter	5. 1000 meter

	Correct Responses	Incorrect Responses
Elem.	214 (58%)	153 (42%)
Jr. High	53 (88%)	7 (12%)
Sr. High	68 (91%)	7 (9%)
Combined	335 (67%)	167 (33%)

5. The temperature on a hot day in Central Nevada is about:
   ____a. 27 Celsius
   ____b. 212 Celsius
   ____c. 37 Celsius
   ____d. 100% Celsius
   ____e. 47% Celsius

	Correct Responses	Incorrect Responses
Elem.	66 (18%)	311 (82%)
Jr. High	26 (43%)	34 (57%)
Sr. High	37 (50%)	37 (50%)
Combined	129 (25%)	382 (75%)

6. What does MKS stand for:

	Correct Responses	Incorrect Responses
Elem.	12 (3%)	364 (97%)
Jr. High	9 (15%)	51 (85%)
Sr. High	34 (47%)	39 (53%)
Combined	55 (11%)	454 (89%)

--Continued on Page 5

SAMPLING BASIC KNOWLEDGE OF TEACHERS (Continued from Page 4)

7. What does SI stand for?

	Correct Responses	Incorrect Responses
Elem.	11 (3%)	365 (97%)
Jr. High	6 (10%)	54 (90%)
Sr. High	21 (28%)	54 (72%)
Combined	38 (7%)	473 (93%)

Total responses to seven questions:

	Correct Responses	Incorrect Responses
Elem.	885 (34%)	1,743 (66%)
Jr. High	241 (57%)	179 (43%)
Sr. High	362 (69%)	160 (31%)
Combined	1,488 (42%)	2,082 (58%)

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